Space Weather Forecast

Issued on Friday, 03 February 2023 at 01:10 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of Moderate solar activity throughout. Slight chance of G1 minor storm days 3 and 4 (5th and 6th Feb).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low, with common-class flares. There are five sunspot regions visible, with the only notable region being in the southeast. While magnetically simple, this has exhibited some slow growth. No Earth-directed coronal mass ejections (CMEs) have been observed on available imagery, however there are a large number of filaments on the disc which will need to be monitored for any eruption.

Solar Wind / Geomagnetic Activity: Solar wind parameters are indicative of a waning fast wind from a coronal hole. Wind speeds were mostly steady and slightly elevated, near 420km/s, with a declining trend back towards slow-ambient levels, as current fast wind wanes. The total interplanetary magnetic field strength was weak, along with the important north-south component. Geomagnetic activity was mostly Quiet (0-2Kp), with an Unsettled interval (Kp3) between 02/0000-0300 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low activity is forecast with the sunspots on the visible disc currently small and relatively simple. There is a very slight chance of Moderate class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed coronal mass ejections (CMEs), although a slight glance cannot be ruled out from a CME later on day 1 (3rd), although this will likely miss. Solar winds will continue to ease through the period, after the recent fast wind, before the next fast wind from a large coronal hole, arrives later on day 2 (04 Feb) or more likely on day 3 (05 Feb) with effects lasting into day 4 (06 Feb). Geomagnetic activity is expected to be mainly Quiet to Unsettled with a slight chance of Active intervals. There is a slight chance (20%) of G1/Minor Storms, mainly day 3 (05 Feb) and possibly into day 4 (06 Feb) due to the arrival of fast wind from a coronal hole.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	10	20	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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